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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/600,590	07/19/2000	BERNARD ASPAR	025219-268	5219

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EXAMINER

KRUER, KEVIN R

ART UNIT PAPER NUMBER

1773

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/600,590

Applicant(s)

ASPAR ET AL.

Examiner

Kevin R. Kruer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 13-17, 35 and 51-53 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 13-17, 35 and 51-53 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 19 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/17/2005.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. The rejection of claims 1, 19-24, 32-34 and 50 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement has been overcome by amendment. Said claims have been canceled.
3. Claims 52 and 53 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no explicit support in the original disclosure for the intermediate layer that is "formed or transferred on the surface of said substrate, the bonding interface being located between said structure and said at least one intermediate layer formed or transferred on the surface of said carrier." Furthermore, there is no support in the original disclosure for the intermediate layer "formed or transferred on the thin layer."

Applicant argues said limitation is supported by the original drawings and the disclosure of page 19 of the specification. The examiner has fully reviewed the specification and figures and cannot find support for said limitation. Applicant is asked to specifically point where in the claims and figures said limitation is supported.

***Claim Rejections - 35 USC § 102***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 13-17, 35, and 51-53 are rejected under 35 U.S.C. 102(b) as being anticipated by Bisaro et al (US 5,141,894).

Bisaro teaches a compliant substrate as depicted in Figure 4d. The laminate comprises a substrate (10), a monocrystalline zone (13) made by implanting ions through the substrate (col 4, lines 64+), a preliminary layer (11) on said monocrystalline zone (col 4, line 52+), an epitaxial growth layer (16) on said preliminary layer (col 5, lines 12+) which can be ion implanted (15), and a final layer of epitaxial growth layer (17) comprising GaAs. Ion that can be implanted include Mn, Al, Si, Cr, Fe, Ni Co, Cu, Ge, Sn, Zn Cd, Ti C, Cl, B, Ar, P, Le, Au, Ni, oxygen, hydrogen, fluorine, Si, Br, and S (col 3, lines 37+). The layers may comprise crystalline, semiconductor materials such as silicon, germanium, or the like (col 6, lines 34+). As the laminate is used as a compliant substrate for epitaxial growth, said microcrystalline zone and/or microcavities are understood to absorb in whole or in part the stresses brought to said compliant substrate.

With regard to claim 35 and the claims that depend therefrom, the ion implantation of the substrate reads on the claimed "bonding interface" of claim 35. The ion implantation of the substrate is taught to create anchoring points that are centered at a depth  $R_p$  and having a width of  $2.35XR_0$  (col 3. lines 46+). The epitaxial growth layer reads on the claimed "thin layer" of claim 35. The claimed "intermediate layer" of claim

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15 is met by the preliminary layer (11). Bisaro teaches the intermediate layer may be made from GaAs (see Fig 4d), arsenic, gallium, Si, or a number of other materials (col 4, lines 57+). Since the layer is amorphous, the examiner takes the position it is inherently "non-homogeneous." With regards to claims 52 and 53 the examiner takes the position that the method in which said intermediate layer is formed does not patentably distinguish the claimed invention from the invention taught in Bisaro. The examiner notes said intermediate layer may be formed directly on the substrate (Fig 4a) and the bonding interface is located between the thin layer and the intermediate layer (see 4d).

With respect to claim 13, the bonding energy between the epitaxial growth layer (16) (which reads on the claimed "the thin layer") and the epitaxial growth layer (17) is altered by ion implantation. Ion implantation is known to affect the surface's roughness that would read on the claimed "defects."

### ***Response to Arguments***

Applicant's arguments filed April 17, 2006 have been fully considered but they are not persuasive.

Applicant argues disagrees with the examiner's assertion that the ion implantation of the substrate disclosed by Bisaro reads on the claimed "bonding interface." Applicant argues the term "bonding interface" is a commonly term in the semiconducting technology which refers to a surface which is common between two individual elements in contact. Anchoring points centered at a depth  $R_p$  inside a bulk

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substrate cannot be assimilated to an interface. The examiner notes the definition noted by applicant in the "Semiconductor water bonding: science and technology" reference was not included with the action. Thus, the examiner is unable to give any fully weigh applicant's argument. The examiner further notes applicant's argument is not consistent with the disclosure of the specification. Specifically, the specification states (page 10, lines 12+) that ion implantation at the interface is within the scope of the disclosed invention. Thus, the examiner maintains the rejection for reasons of record.

The 35 U.S.C.112, first paragraph rejection and the 103 rejections of the non-final office action have been overcome by amendment. Therefore, applicant's arguments with regards to said rejections are moot.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin R. Kruer whose telephone number is 571-272-1510. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin R. Kruer  
Patent Examiner-Art Unit 1773